(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 16 September 2004 (16.09.2004)

PCT

(10) International Publication Number WO 2004/079326 A3

(51) International Patent Classification7: C07K 14/72, G01N 33/74, A61K 31/00 C12O 1/48.

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(21) International Application Number:

PCT/EP2004/002185

(22) International Filing Date: 4 March 2004 (04.03.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 03005186.6

7 March 2003 (07.03.2003)

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW) Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW ML, MR, NE, SN, TD, TG).

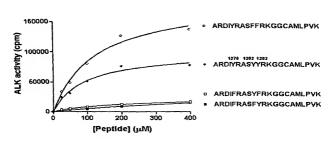
Published:

with international search report

- before the expiration of the time limit for amending th claims and to be republished in the event of receipt of
- amendments (88) Date of publication of the international search report:

9 December 200 [Continued on next page

(54) Title: ANAPLASTIC LYMPHOMA KINASE ASSAY, REAGENTS AND COMPOSITIONS THEREOF



(57) Abstract: Disclosed are methods for detecting ALK tyrosine kinase activity and for the identification of compounds that me ulate ALK activity, peptide substrates, reagents and compositions thereof.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

I Application No Interi PCT/EP2004/002185

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C12Q1/48 C07K14/72 A61K31/00 G01N33/74

According to international Patent Classification (iPC) or to both national classification and iPC

B. FIELDS SEARCHED

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Minimum documentation searched (classification system followed by classification symbols) IPC 7 C12Q C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, BIOSIS, CHEM ABS Data, EMBASE, MEDLINE, Sequence Search

Category *	Citation of document, with indication, where appropriate, of th	e relevant passages	Relevant to claim No.
А	DATABASE WPI Section Ch, Week 199325 Derwent Publications Ltd., Lor Class A96, AN 1993-201126 XP002249142 & JP 05 126833 A (TOSOH CORP) 21 May 1993 (1993-05-21) abstract	idon, GB;	1-17,19, 20
A	US 5 770 421 A (LOOK A THOMAS 23 June 1998 (1998-06-23) the whole document	ET AL)	1-17,19, 20
Α	WO 95/14930 A (SADICK MICHAEL GENENTECH INC (US); GODOWSKI M) 1 June 1995 (1995-06-01) the whole document	DANIEL PAUL J (US);	1-17,19, 20
		-/	
X Furt	ther documents are listed in the continuation of box C.	X Patent family members are listed	in annex.
"A" docum consk "E" earlier filing o "L" docum which citatic "O" docum other	ategories of cited documents: and defining the general state of the art which is not dever to be of particular reisvance document but published on or after the international date ent which may throw doubts on priority dain(8) or is cited to establish the publication date of another or or other special resource to the pro- training to an oral disclosure, use, exhibition or reads. The property of the international filing date but than the priority date claimed	"T" later document published after the interprising the profile of a principle of the principle of a principle of the principle of a particular relevance; the cannot be considered movel or cannot be considered movel or cannot be considered movel or cannot involve an inventive step when the device of the principle of the same patent or principle or principle of the same patent or principle o	seary underlying the claimed invention of the considered to be considered to be comment is taken alone claimed invention wentive step when the one other such docupus to a person skilled
	actual completion of the international search	Date of mailing of the international se	arch report
:	1 July 2004	2.8 SEP 2004	
Name and	mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 N.I2289 NV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Gunster, M	
Form PCT/IS/	AV210 (second sheet) (January 2004)		page 1 of 2

Intern: J Application No PCT/EP2004/002185

	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	Relevant to claim No.
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Assevant to claim No.
Α	WO 98/49317 A (PELES ELIOR ;ONRUST SUSAN (NZ); CLARY DOUGLAS (US); HUI TERANCE H) 5 November 1998 (1998-11-05) the whole document	1-17,19, 20
Α	WO 95/02187 A (BARKER KAREN TRACEY ;CROMPTON MARK ROGER (GB); MARTINDALE JANE ELI) 19 January 1995 (1995-01-19) the whole document	1-17,19, 20
Α	SADICK M D ET AL: "Kinase receptor activation (KIRA): A rapid and accurate alternative to end-point bioassays" JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL ANALYSIS 1999 NETHERLANDS, vol. 19, no. 6, 1999, pages 883-891, XP002249139 ISSN: 0731-7085 the whole document	1-17,19,
Α	TURTURRO FRANCESCO ET AL: "Model of inhibition of the NPM-ALK kinase activity by herbimycin A." CLINICAL CANCER RESEARCH: AN OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH. UNITED STATES JAN 2002, vol. 8, no. 1, January 2002 (2002-01), pages 240-245, XP002249140 ISSN: 1078-0432 the whole document	1-17,19, 20
A	MORRIS STEPHAN W ET Al: "ALK, the chromosome 2 gene locus altered by the t(2;5) in non-Hodgkin's lymphoma, encodes a novel neural receptor tyrosine kinase that is highly related to leukocyte tyrosine kinase (LTK)." ONCOGENE, vol. 14, no. 18, 1997, pages 2175-2188, XP002249141 ISSN: 0950-9232 the whole document	1-17,19,
	*	

onal application No. PCT/EP2004/002185

Box II	Observations where certain claims were	found unsearchable (Continuation of item 2 of first sheet)
This Inte	ternational Search Report has not been established	In respect of certain claims under Article 17(2)(a) for the following reasons:
1.	Claims Nos.: because they relate to subject matter not required	to be searched by this Authority, namely:
2.	Claims Nos.: because they relate to parts of the international A an extent that no meaningful international Search	pplication that do not comply with the prescribed requirements to such can be carried out, specifically:
з. 🔲		drafted in accordance with the second and third sentences of Rule 6.4(a).
Box III	I Observations where unity of invention is	lacking (Continuation of item 3 of first sheet)
This Inte	ternational Searching Authority found multiple inver	ations in this international application, as follows:
	see additional sheet	
1.	As all required additional search fees were timely searchable claims.	paid by the applicant, this International Search Report covers all
2.	As all searchable claims could be searched with of any additional fee.	out effort justifying an additional fee, this Authority did not invite payment
з. 🗌	As only some of the required additional search for covers only those claims for which fees were painted.	ees were timely paid by the applicant, this International Search Report d, specifically claims Nos.:
4. X	No required additional search fees were timely prestricted to the invention first mentioned in the control of t	said by the applicant. Consequently, this international Search Report is claims; it is covered by claims Nos.:
Remar	urk on Protest [The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-17,19,20

ALK assay using a peptide of SEQ ID N. 1 or SEQ ID N. 2 and said peptides and related kits.

2. claim: 18

Use of compounds of formula (I) for the preparation of a medicament for the treatment of ALK-related tumors.

Intern I Application No PCT/EP2004/002185

						1 61/ 11 200-	7 002103
	atent document in search report		Publication date		Patent family member(s)		Publication date
JP	5126833	Α	21-05-1993	NONE			
US	5770421	A	23-06-1998	US US US AU AU CA DE EP JP WO	5529925 6174674 6451997 2001021505 679833 1511695 2177957 69433665 0731806 9512161 9515331	A1 D1 A1 T	25-06-1996 16-01-2001 17-09-2002 13-09-2001 10-07-1997 19-06-1995 08-06-1995 06-05-2004 18-09-1996 09-12-1997
wo	9514930	A	01-06-1995	US ATU AU AU AU AU AU AU AU AU AU AU AU AU BE BE BE BE BE BE BE BE BE BE BE BE BE	6001621 163231 189095 698975 1210895 2175893 69408541 730740 0730646 0730740 2116066 3026430 1008440 9506250 3442784 9505889 9514776 9502147325 2002147325 2002147325 2002147325 5769858 6025145 6025145 6087144 2002137113	A1 T3 A1 B2 T A1 AA1 AA A A A A A A A A A A A A A A A	14-12-1999 15-02-1998 13-06-1995 12-11-1998 13-06-1995 01-06-1995 01-06-1995 19-03-1998 06-08-1998 28-09-1998 11-09-1996 01-07-1998 07-05-1999 02-09-2003 10-06-1997 02-09-2003 10-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-06-1995 01-08-1998 01-09-2001 11-09-2001
WO	9849317	A	05-11-1998	AU CA EP JP US WO US US US	7260098 2288221 0979288 2002513289 2003073143 9849317 6228641 2002119501 2003095970 2003008347 6342593	A1 A2 T A1 A2 B1 A1 A1	24-11-1998 05-11-1998 16-02-2000 08-05-2002 17-04-2003 05-11-1998 08-05-2001 29-08-2002 22-05-2003 09-01-2003 29-01-2002

Intern (Application No PC)/Er2004/002185

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9849317	Α		US US	6388063 2004087783		14-05-2002 06-05-2004
WO 9502187	Α	19-01-1995	AU WO ZA	7081094 9502187 9404983	A1	06-02-1995 19-01-1995 08-01-1996